Complete Summary

GUIDELINE TITLE

Practice management guidelines for the management of mild traumatic brain injury.

BIBLIOGRAPHIC SOURCE(S)

EAST Practice Management Guidelines Work Group. Practice management guidelines for the management of mild traumatic brain injury. Winston-Salem (NC): Eastern Association for the Surgery of Trauma (EAST); 2000. 29 p. [76 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Mild traumatic brain injury (concussion)

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Emergency Medicine
Internal Medicine
Neurological Surgery
Neurology
Nuclear Medicine
Radiology

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide recommendations to facilitate a safe, more uniform, and cost-effective approach to the understanding and management of mild traumatic brain injury

TARGET POPULATION

Patients with mild traumatic brain injury

INTERVENTIONS AND PRACTICES CONSIDERED

1. Clinical diagnosis of brain injury and neurotrauma
2. Head computed tomography
3. Neuropsychological testing
4. Neurosurgical consultation
5. Grading of concussion
6. Observation of post-concussive symptoms

MAJOR OUTCOMES CONSIDERED

Clinical utility of head computed tomography and neuropsychological testing

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A computerized search of Medline and Cochrane databases was performed. Key words included brain injury, concussion, closed head injury, and/or brain trauma. English language references between 1975 and 1998 were listed.

Primary exclusions involved studies or reviews not relevant to acute mild traumatic brain injury. Approximately 100 remaining citations were supplemented by reference sections from selected articles and texts. For the purposes of developing an institutional protocol, secondary exclusions included eliminating poor quality studies or reviews felt non-contributory or redundant. Subcommittee members for this Eastern Association for the Surgery of Trauma document followed a similar process that yielded a total of 76 citations.

NUMBER OF SOURCE DOCUMENTS

76

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Classification Scheme:

Class I: Prospective, Randomized, Double-Blinded Study

Class II: Prospective, Randomized, Non-Blinded Trial

Class III: Retrospective Analysis of Patient Series

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Level I: The recommendation is convincingly justifiable based on the available scientific information alone. This recommendation is usually based on Class I data, however, strong Class II evidence may form the basis for a Level I recommendation, especially if the issue does not lend itself to testing in a randomized format. Conversely, low quality or contradictory Class I data may not be able to support a Level I recommendation.

Level II: The recommendation is reasonably justifiable by available scientific evidence and strongly supported by expert opinion. This recommendation is usually supported by Class II data or a preponderance of Class III evidence.

Level III: The recommendation is supported by available data but adequate scientific evidence is lacking. This recommendation is generally supported by Class III data. This type of recommendation is useful for educational purposes and in guiding future clinical research.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The draft document is submitted to all members of the panel for review and modification. Subsequently the guidelines are forwarded to the chairmen of the Eastern Association of Trauma ad hoc committee for guideline development. Final modifications are made and the document is forwarded back to the individual panel chairpersons.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Summary

A. Mild traumatic brain injury has defined clinical diagnostic criteria, the hallmark of which is a transient neurologic deficit, along with a diagnostic study confirming the absence of acute skull fracture or pathology.
B. Computed tomography of the brain is the gold standard diagnostic study for mild traumatic brain injury patients and should be performed on all patients sustaining a transient neurologic deficit secondary to trauma. A patient with a normal head computed tomography has a 0 to 3% probability for neurologic deterioration, usually in patients with a Glasgow Coma Scale (GCS) 13 and 14.
C. Neuropsychological testing may assist in the diagnostic work-up to identify high-risk patients during their acute hospitalization, and/or be used in one to two months to evaluate patients with persistent post-concussive symptoms.
D. The majority of mild traumatic brain injury patients recover completely within one month from mild traumatic brain injury. More information is necessary to make data-based recommendations on the management and prognosis in the minority who do not recover in that time frame.

A. Level I Recommendations

There is insufficient data to support a recommendation at this level.

B. Level II Recommendations

1. Computed tomography of the brain is the gold standard diagnostic imaging study for mild traumatic brain patients and should be performed on all patients sustaining a transient neurologic deficit secondary to trauma.
2. Mild traumatic brain injury patients perform less well on complicated tasks requiring prolonged attention and rapid response times when

compared to controls, and this deficit resolves in the majority of patients by one month post-injury. Patients may be advised and reassured of this prognosis during outpatient follow-up.

3. A subset of patients sustaining mild traumatic brain injury will develop persistent symptoms in the absence of anatomic findings. Patients who continue to experience symptoms more than six weeks after mild traumatic brain injury should undergo formal neuropsychologic testing. A variety of tests can be performed, although the data do not clearly identify which one is better or best.

C. Level III Recommendations

1. Patients sustaining mild traumatic brain injury as an isolated diagnosis following a complete trauma evaluation may, at the discretion of the responsible physician, be discharged from the emergency department/trauma evaluation area if they fulfill certain "safe discharge" criteria.
2. Post-concussive symptoms include headache, dizziness, memory problems, and other symptoms that occur acutely in approximately 50% of mild traumatic brain injury patients, and in 33% at three months from injury. These symptoms may identify a subgroup of patients at subsequent increased risk for prolonged cognitive deficits as a result of their injury.
3. Neuropsychological testing of mild traumatic injury patients in the acute setting has been suggested to identify patients at high-risk for prolonged cognitive deficits, however, it needs further study.

Definitions:

Recommendation Scheme:

Level I: The recommendation is convincingly justifiable based on the available scientific information alone. This recommendation is usually based on Class I data, however, strong Class II evidence may form the basis for a Level I recommendation, especially if the issue does not lend itself to testing in a randomized format. Conversely, low quality or contradictory Class I data may not be able to support a Level I recommendation.

Level II: The recommendation is reasonably justifiable by available scientific evidence and strongly supported by expert opinion. This recommendation is usually supported by Class II data or a preponderance of Class III evidence.

Level III: The recommendation is supported by available data but adequate scientific evidence is lacking. This recommendation is generally supported by Class III data. This type of recommendation is useful for educational purposes and in guiding future clinical research.

Classification Scheme:

Class I: Prospective, randomly assigned, double-blinded study

Class II: Prospective, randomly assigned, non-blinded trial

Class III: Retrospective series of patients or meta-analysis

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Conclusions were based on evidence obtained from prospective, randomly assigned, double-blinded studies (Class I); prospective, randomly assigned, non-blinded studies (Class II); or retrospective series of patients or meta-analysis (Class III). The evidentiary tables included one Class I reference, nineteen Class II references, and fifty-nine Class III references.

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate clinical utilization of diagnostic tests for mild traumatic brain injury

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- Many aspects of mild traumatic brain injury (as with all blunt brain injury) remain confusing, particularly with regard to the spectrum of clinical outcomes that may result.
- The role of psychomotor testing, such as cognitive testing, in an attempt to further characterize the injury, needs additional application and study.
- The common occurrence of mild traumatic brain injury lends itself to meaningful analysis, both within an institution and in a multi-institutional format.
- Enhanced characterization of the mild traumatic brain injury will allow more appropriate utilization of the many subspecialists involved in post-traumatic care, including the trauma surgeon, neurologist, physiatrist, physical, cognitive and occupational therapists, psychiatrists, and primary care physicians.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The guideline developers make the following recommendations regarding implementation:

Implementation involves extensive education and inservicing of nursing, resident, and attending staff members and has one important guiding principle: the guidelines must be available to the clinicians in real time while they are actually seeing the patient. The two most common ways to apply these are by using either a critical pathway or a clinical management protocol. A critical pathway is a calendar of expected events that has been found to be very useful within designated diagnosis-related groups. In trauma, where there are multiple diagnosis-related groups used for one patient, pathways have not been found to be easily applied with the exception of isolated injuries. Clinical management protocols, on the other hand, are annotated algorithms that answer the "if, then" decision making problems and have been found to be easily applied to problem-, process-, or disease-related topics. The clinical management protocol consists of an introduction, an annotated algorithm and a reference page. The algorithm is a series of "if, then" decision making processes. There is a defined entry point followed by a clinical judgment and/or assessment, followed by actions, which are then followed by outcomes and/or endpoints. The advantages of algorithms are that they convey the scope of the guideline, while at the same time organize the decision making process in a user-friendly fashion. The algorithms themselves are systems of classification and identification that should summarize the recommendations contained within a guideline. It is felt that in the trauma and critical care setting, clinical management protocols may be more easily applied than critical pathways, however, either is acceptable provided that the formulated guidelines are followed. After appropriate inservicing, a pretest of the planned guideline should be performed on a limited patient population in the clinical setting. This will serve to identify potential pitfalls. The pretest should include written documentation of experiences with the protocol, observation, and suggestions. Additionally, the guidelines will be forwarded to the chairpersons of the multi-institutional trials committees of the Eastern Association for the Surgery of Trauma, the Western Association for the Surgery of Trauma, and the American Association for the Surgery of Trauma. Appropriate guidelines can then be potentially selected for multi-institutional study. This process will facilitate the development of user friendly pathways or protocols as well as evaluation of the particular guidelines in an outcome based fashion.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

EAST Practice Management Guidelines Work Group. Practice management guidelines for the management of mild traumatic brain injury. Winston-Salem (NC): Eastern Association for the Surgery of Trauma (EAST); 2000. 29 p. [76 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000

GUIDELINE DEVELOPER(S)

Eastern Association for the Surgery of Trauma - Professional Association

SOURCE(S) OF FUNDING

Eastern Association for the Surgery of Trauma (EAST)

GUIDELINE COMMITTEE

Eastern Association for the Surgery of Trauma (EAST) Practice Management Guidelines Work Group

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Authors: James G. Cushman, MD; Nikhilesh Agarwal, MD; Timothy C. Fabian, MD; Victor Garcia, MD; Kimberly K. Nagy, MD; Michael D. Pasquale, MD; Arnold G. Salotto, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies are available (in PDF format) from the Eastern Association for the Surgery of Trauma (EAST) Web site.

Print copies: Available from EAST, c/o Michael Pasquale, M.D., Lehigh Valley Hospital, Cedar Crest and I-78, PO Box 689, Allentown, PA 18105. (610) 402-8464, email: michael.pasquale@lvh.com.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Eastern Association for the Surgery of Trauma (EAST) Ad Hoc Committee on Practice Management Guideline Development. Utilizing evidence based outcome measures to develop practice management guidelines: a primer. Allentown (PA): EAST, 2000. 18 p.

Electronic copies: Available (in PDF format) from the EAST Web site.

Print copies: Available from the EAST Guidelines, c/o Fred A. Luchette, MD, Loyola University Medical Center, Department of Surgery Bldg. 110-3276, 2160 S. First Avenue, Maywood, IL 60153; Phone: (708) 327-2680; E-mail: fluchet@lumc.edu.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on September 17, 2001. The information was verified by the guideline developer on September 27, 2001.

COPYRIGHT STATEMENT

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